

College Quest : A College Simulation Game

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Abstract

This paper presents "College Quest," a college life simulation game designed to aid new university students in transitioning from high school to college. Addressing the challenges posed by the COVID-19 pandemic, which significantly altered the traditional college experience, this game provides an interactive and engaging platform for students to gain insights into university life. Through various scenarios and mini-games that simulate key aspects of college, such as course registration, club activities, group projects, and job interviews, "College Quest" aims to alleviate the apprehension and uncertainty associated with entering university. Developed using Unity and enhanced with AI-generated art from Miri Canvas, the game offers a realistic and immersive experience, catering to the current generation's preference for digital interaction and simulation-based learning. This paper discusses the game's design, implementation challenges, and its potential as an innovative educational tool for future university students.

Keywords: College Life Simulation, Educational Gaming, Indirect Experience

1 Introduction

The COVID-19 pandemic affected various aspects of human life. College life is one of the contracted offline activities. According to the survey conducted on university students, they showed dissatisfaction with college life on inability to engage in activities other than academic activities, less interaction with friends, and restriction on using school facilities. These results indicate lack of communication with colleagues, which infers difficulty in obtaining information about school life. There is no other way for students to get information aside from seniors or school guidebook that alternative channel providing college life experience is needed.

Although people spend long time in school in their teenage years, university is very different from such school, especially in Korea. Students enter university

without any knowledge about it and often find themselves having difficulty to adjust to university. The biggest difference is in school system. While school life until high school is passive with designated subjects based on compulsory education, university is active with full of options. If there is a way to experience college life in advance, it will help people to easily adjust to different environment.

In the project, the proposed solution is to introduce a college simulation game, College Quest, which includes many events students can encounter in college life through various scenarios and mini-games. The solution is in a form of simulation game because of the popularity of mobile simulation game by year worldwide and experience by simulating in advance helps with active control. The simulation game provides users to experience college life from freshman to senior with enjoyment and allow them to prepare for college life with full of expectation.

2 Design

In this chapter, overall game architecture, a core tool used for game development, and challenges tackled in the project are addressed.

2.1 Game Architecture

The overall game architecture is shown in Figure 1. After introductory page, college life scripts are shown, which lead to mini-games. There are four different mini-games for each grade year: Application for classes, Club MT, Group Project, and Employment. In application for classes, competition rate is selected and course registration game is undergone. In club MT, timing game, bunny bunny, carrot carrot, Strawberry carrot watermelon melon, and Baskin Robbins 31 are included. In Group Project, research, creating ppt, presentation process are simulated. In Employment, one of AI interview composed of Number puzzle, emotional game, and rock paper scissors are performed, leading to interview simulation.

After going through scripts and mini-games, users encounter ending based on mental index and result of Interview. Each ending scenario is shown in Figure 2

2.2 Tool

For game development, Unity is used in programming and Miri Canvas is used for Arts generation.

2.2.1 Unity

Unity is a widely used game engine for the development of 2D or 3D games [1]. It uses C language and is particularly popular for indie-game development. Unity is featured by lightweight render pipeline Built for Mobile Platforms.

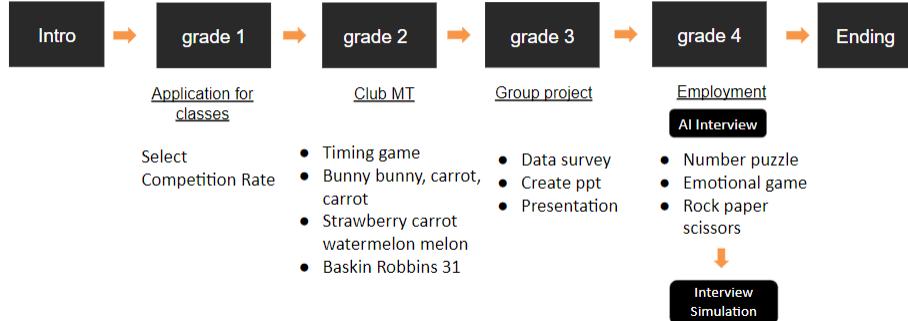


Figure 1: College Quest Game Architecture

Scenario	Mental index	Interview	Ending phrase
1	good	pass	“열심히 노력한 보람이 있네! 행복한 직장 생활의 시작!” “Your hard work paid off! The beginning of a happy working life!”
2	average	fail	“평범한 듯 특별한 순간, 새로운 시작” “A normal and special moment, a new start”
3	bad	pass	“힘든 길이지만, 내가 꺾을 수 있어.” “It's a tough road, but I can beat it.”
4	good	fail	“막다른 길이 아니야, 새로운 가능성의 문이 열렸어.” “It's not a dead end, the door to new possibilities has opened.”
5	average	pass	“작은 시작이 큰 꿈을 이루는 계기일지도 몰라.” “A small start may be the trigger for a big dream.”
6	bad	fail	“두려움이 있어도, 새로운 시작은 언제나 가능해.” “Even with fear, a new beginning is always possible.”

Figure 2: College Quest Ending Scenario

Over 70% of mobile games are made with Unity and it is free for projects with annual returns of less than \$100,000. Another widely used game engine is Unreal Engine. It is a game engine originally designed for PC first-person shooter games, mainly used as technology for producing games with state-of-the-art graphics. Considering features of game engines, budget, and nature of simulation game, Unity is chosen as a game development tool for this project.

2.2.2 Miri Canvas

Miri Canvas provides AI image generator by choosing style, entering keyword, and uploading reference image. The overall process can be repeated until user finds desired image. According to the use and terms and conditions of "miri canvas", users who view the post should be able to know that the content is the result of AI. Therefore, this project will indicate that the image was created with AI at the start and end of the game. Using an AI image generator in Miri

Canvas, background and character images for the project were generated.

2.3 Challenges

Unity Since many team members had low familiarity on Unity, the progress on game development took longer than expected. Therefore, overall schedule has been fixed and self-study and active discussion took place throughout the project. **Arts** In general game project, art designer is included as team member. However, there was no one majoring in art design within a team that artwork was very challenging area. To solve the absence of an art designer, an AI image creation tool was used. However, it was difficult to accurately obtain a desired image using the AI image generation tool. In addition, acquiring the unity of the entire game was challenging because the texture of the painting changed each time it was created as shown in Figure 3. As a solution, function in AI image



Figure 3: College Quest Arts Trial and Error

tool to change the image picture of a specific place and draw it as a painting was used. The example of generation of final arts used is shown in Figure 4



Figure 4: College Quest Arts Solution

3 Implementation

Describe each element in terms of how it was implemented in the game. Since this is a Unity 2D mobile game, it includes the overall scenario, art, UI design, and musical elements of the game. In Figure 5, we've included the overall task screen in Unity. As a game engine, Unity is made up of many components, including hierarchy, main screens, and assets, and features for each. On the main screen, users can set up any combination of objects they want to create in Unity. Additionally, implementing functionality for each object utilizes the inspector on the right. Inserting the appropriate script into the object's inspector grants

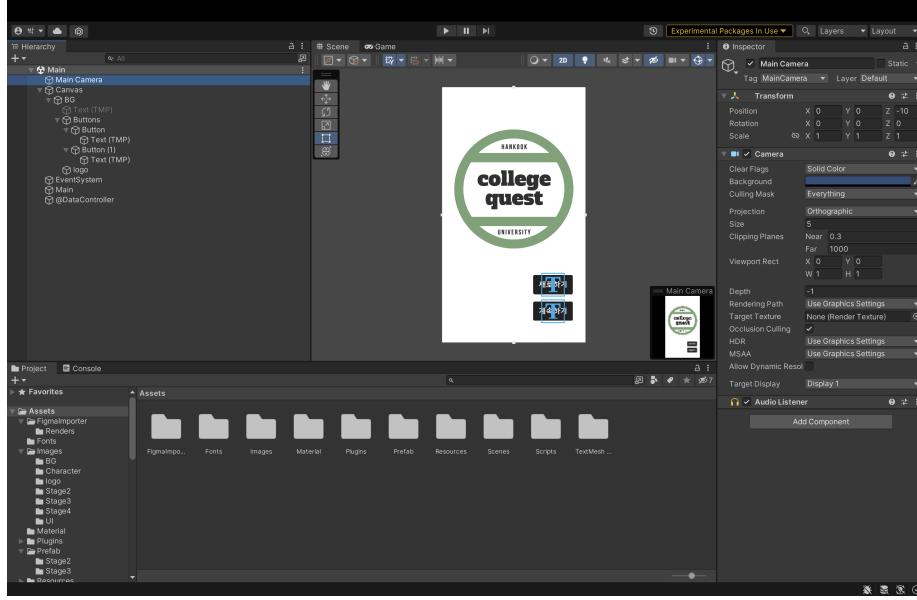


Figure 5: Unity main

functionality. For basic functionality, refer [2]. In Figure 6, two figures describes the dialog system and the save/load system. The first figure describes saving and loading game data. `SaveData()` converts and saves game data to a JSON file. `LoadData()` converts the JSON file back to game data. Saving occurs after each game step and loading occurs at game startup. The second figure Dialog System outlines a system for managing conversations in your game. `CSVConverter` is responsible for converting CSV (Comma Separated Values) files into a dictionary data structure that maps strings to a list of Dialogue objects. Class `Dialogue` is a class definition with properties such as type, name, action, nextCategory, and mentalIndex. The `DialogueController` controls the dialog user interface (UI), setting up things like text boxes, character images, character names, and the actual dialog text. `DialogueUtils` provides utility functions, such as the ability to return the next dialog in a sequence or skip a dialog. `StageManager` handles events that trigger dialog based on game stages or specific scenarios. `StartDialogue(string category)` is a function that starts a dialog based on a given category.

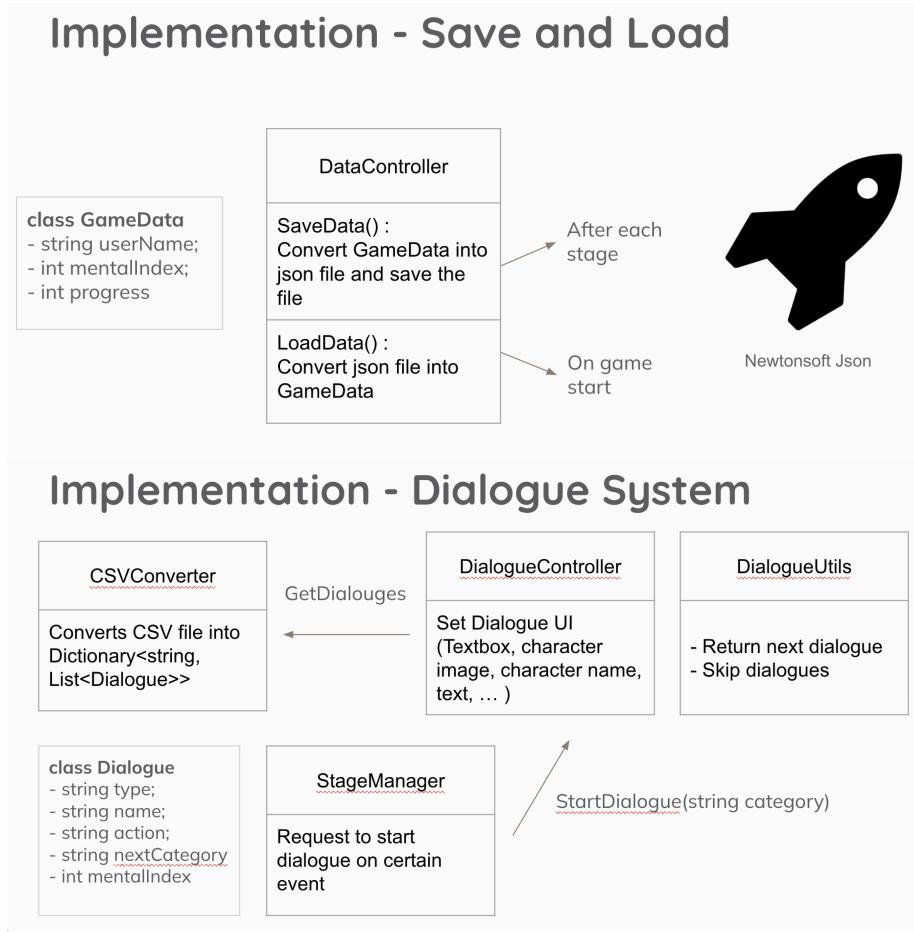


Figure 6: College Quest process

3.1 Scenario

A scenario is a story that runs through the entire game. The protagonist progresses through his or her story from first to fourth grade, and players follow along and watch as the story unfolds. This is a classic story progression in mobile games. Write a story script like Figure 7 that underpins the game's progression and integrate it with Unity through the settings so that the script appears in the UI later on.

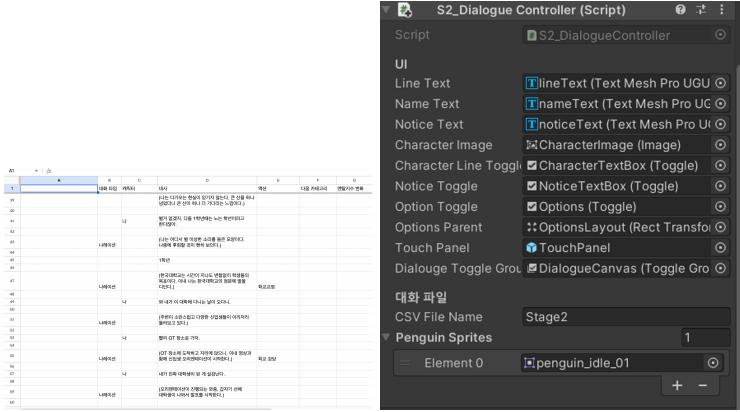


Figure 7: College Quest script and dialogue controller

3.2 Arts

Art is an important part of the game elements. Art basically provides visual enjoyment for the user playing the game, and through its direct visual representation, it can help the user become more immersed in the game and feel more involved in the game situation or progression. Starting from the basic background, various characters and other elements are placed appropriately according to the game situation to enhance the visual impact of the game. In Figure 8, there are some examples of characters used in games.



Figure 8: College Quest character

3.3 UI/UX

UI refers to the user interface, which literally means everything including the design that users see when they play your game. Users see your game design in real time as they play your game. In Unity, you can adjust the settings of the interface you want to create through the canvas, as shown in Figure 9, and then insert the prepared art and scripts in the appropriate places. Along the

way, also utilize the design tool FIGMA to insert designed images into Unity via [3]. The figure 10, assembled in this way, is a typical game progress screen

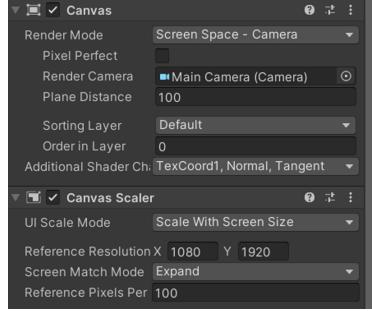


Figure 9: College Quest canvas

for College Quest. This is a basic game progression screen, where the game is played by touching the screen to switch to the next screen. Players can progress through the game using the scripts and game character screens and options below.

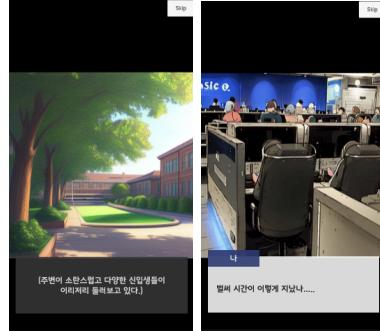


Figure 10: College Quest game screen

3.4 Mini Game

The minigames include four games, one representing each grade level. As the storytelling progresses and certain situations arise, the screen flips to the game progress screen and a specific game is played. Here, players change the ending of the game by affecting their mental quotient, which will be discussed later. The four minigames are composed of representative events that anyone would experience in college. In Figure 11, Each event consists of a freshman's first challenge: registering for classes, a sophomore's club activity, a junior's team building activity, and a senior's job interview activity. The first game, Registration, is the first challenge for freshmen who have just entered their freshman



Figure 11: College Quest Mini Game

year. When the timer strikes 10, you'll be asked to sign up for six courses, each with a one-second time limit. Once you hit the button, you have one second to hit the button for another random course. Repeat this until you have pressed the 6 different buttons at least once. If you fail to apply for more than one course, it is considered a final failure.

The second game, Club Games, is based on the interactions that many students experience during their school years in clubs and organizations. In the second picture above, the game is based on a drinking game that many students have experienced at least once. The game is based on a series of simple rules, with a script that allows you to drink if you lose.

The third is the group task, which is the highlight of the university life. The game is played in the order of researching, choosing a presentation, and presenting. In the research phase, you can research various materials and highlight the parts you think are important. After the research phase, you will select your favorite presentation PPT and finally enter the presentation phase. In the presentation phase, you can try to make eye contact with the audience by clicking on them and select the appropriate lines for each slide.

Finally, the fourth game consists of a job interview, which is the next step for college students to enter the workforce. In this game, the main character, the player, goes through a simple story and conducts an AI competency test. An AI competency test is a test in which an AI, not a human, identifies an applicant's competencies through big data and delivers them to the company. In this game, you will be asked to solve 8 simple puzzles in order from top to bottom according to the number. After the AI competency test, an interview is conducted through a script and appropriate line selection, and the ending result is displayed according to the interview result and the mental index that has been progressing while playing the game.

3.5 Sound

Music is another important aspect of the game. Since it's difficult to create music from scratch, we replaced the nocopyrighted music with music that is

relevant to the project's game. Along the way, we found the right files for background music, various sound effects, etc. and incorporated them into the game.

3.6 Mental Index

The Mental Index is a unique aspect of the game that has a significant impact on the final ending of the game. It is affected by the choices you make in events as you progress through the story, and is also heavily influenced by minigames, which are milestones in each grade. The Mental Index can rise and fall over the course of the game. The Mental Index is organized into three tiers, Good, Fair, and Poor, with each tier quantified as 200/100 199/0 99, and so on. When you first start the game, your Mental Index starts at 100, then your choices affect your Mental Index by 10, and your minigame success/failure affects your Mental Index by 50. After all of these effects, your final Mental Index is what changes the ending of the game.

4 Limitations and Discussions

4.1 Limited expression

The project centers the game around an ordinary day in the life of a student. However, there are many different students and environments in the world, and as a result, many complex and difficult events occur. Since the game follows a set scenario, it cannot capture all of the situations that many students experience in real life, but only some of them. Also, even in the same situation, there are many changes depending on the actions of the players, so the outcome may be different from the set situation in the game.

4.2 Difficulty with detailed implementation

Game development is a large project that takes into account many factors, from choosing the basic game engine tools to the game's concept, genre, progression, purpose, storytelling, art, music, and more. While we each had our own role in developing a game, we made many errors and attempts along the way, and it was difficult to combine our work or use different programs to develop it. As a result, it was difficult to comprehensively include the specific and detailed parts we wanted to express in the beginning, and it was difficult to implement all the good ideas we had.

5 Related Work

5.1 Group Work Simulator

Group Work Simulator a simulation game of group project. The game lets you customize your character's stats, assign roles to your teammates, and play as a team. There will be some disagreements, and some members will excuse themselves from participating, but the goal is to overcome them and get good grades in the end. Players can experience the realities of teamwork, responsibility, and society through the game. The limitation of group work simulator is that it deals with very small portion of college life, group project.

5.2 Business Administration Job Maker

Business Administration Job Maker is a career simulation game for student majoring in business administration. Players have stats, and managing those stats plays an important role in the game. The objective is to graduate the business student safely while distributing the stats appropriately, as a drop in certain stats can highlight disadvantages. The game features a variety of business school lectures, team play, and even a graduation finale. In many ways, players can feel the pain of being a business student. The limitation of Business Administration Job Maker is that the main character is with specific major and character, which might limit the generalization of experience.

6 Conclusion

Not only Sungkyunkwan University, but university is different from the education up to high school, where students only study according to the prescribed studies up to this point, and students think and participate in their own school life. Therefore, some students will naturally have difficulties and may find it difficult to adapt. Therefore, the biggest purpose of this project is to give students an indirect experience of university life so that they can do it without fear of university life. This project is basically a storytelling method of 2D mobile game. As players progress through the game, they will be able to imagine themselves in these situations in their respective grades, and it will serve as a guide to their school life. Also, even if they are not a prospective college student, they will be able to recall their past and relive their memories while playing the game. We hope that everyone who plays the game will be able to soothe their tired minds and relax for a while.

References

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